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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/779,508 | 02/09/2001 | Yongjun Jeff Hu | M4065.0134/P134-A | 3671 |

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EXAMINER

TRUONG, BAO Q

ART UNIT

PAPER NUMBER

2875

DATE MAILED: 01/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 09/779,508 | | HU, YONGJUN JEFF | |
| | Examiner | | Art Unit | |
| | Bao Q. Truong | | 2875 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31,33-39 and 41-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31,33-39 and 41-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 31 and 33-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee [US 5,401,676].

Regarding claims 31 and 33, Lee discloses a silicon field emission device having a silicon substrate [31], a cone shaped emitter [37] and a silicide layer [40] (figure 3, column 3, lines 4-14).

Lee does not specifically disclose the thickness of the silicide layer being about of 50-3000 angstroms.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify a silicide layer thickness value because the particular range value of the silicide layer thickness must first be recognized as a result-effective range thickness value, i.e., a range thickness value that achieves a recognized result, before the determination of the optimum or workable ranges of said thickness value might be characterized as routine experimentation. See *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) and *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

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Regarding claims 34-38, Lee discloses a silicide layer [40] with many kinds of metal (column 4, lines 20-25).

3. Claims 39 and 41-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar [US 5,763,997].

Regarding claims 39 and 41, Kumar discloses a field emission device having a submicro-tip [18] on a metal layer [17], a layer [19] of low work function material over the submicro tip [18], and a phosphor layer [16] (figure 2, column 1, lines 45-67 and column 2, lines 1-15).

Kumar does not specifically disclose the thickness of the layer being about of 50-3000 angstroms.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to specify the layer thickness value because the particular range value of the layer thickness must first be recognized as a result-effective range thickness value, i.e., a range thickness value that achieves a recognized result, before the determination of the optimum or workable ranges of said thickness value might be characterized as routine experimentation. See *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) and *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 42-49, Kumar discloses a metal layer [17] and a layer [19] being made of any known low work function material.

Kumar does not specifically disclose any types or kinds material in combination with silicon.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use any known material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Response to Arguments

1. Applicant's arguments filed 14 November 2002 have been fully considered but they are not persuasive.

The applicant recites that neither Lee nor Kumar teach or suggest the thickness of the metal silicide, which is between 50-3000 angstroms. However, the applicant does not disclose any graphs, tables or any experimental evidence, which show the advantage benefits of the given thickness. Therefore, it is considered to be obvious as a design choice.

The applicant recites that neither Lee nor Kumar teach or suggest the materials as claimed. There is no patent weight for choosing a known material because it is obvious as a matter of design choice (see *In re Leshin*, 125 USPQ 416).

In view of above, the present pending claims in this application are unpatentable.

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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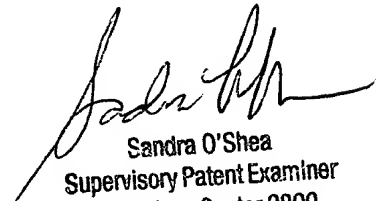
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bao Q. Truong whose telephone number is (703) 308-6452. The examiner can normally be reached on Monday-Friday (8:00 AM - 4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra L. O'Shea can be reached on (703) 305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Bao Q. Truong
Examiner
Art Unit 2875


Sandra O'Shea
Supervisory Patent Examiner
Technology Center 2800

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BQT

December 23, 2002